

REMARKS

Claims 1-10 and 12-32 are pending. Claims 17-32 are withdrawn from further consideration. Claim 11 is canceled herein without prejudice or disclaimer.

Applicants' Response to the Claim Rejections under 35 U.S.C. §103(a):

Claims 1-9 are now rejected under 35 U.S.C. § 103(a) as being unpatentable over *Suenaga et al.* in view of *Vente et al.* In response thereto, applicants respectfully traverse on the basis that there is no teaching or motivation which would lead the skilled artisan to make the combination. Specifically, there is no teachings in *Suenaga et al.* nor *Vente et al.* that suggests that "the integration of Ir in the A site or the B site of ferroelectric layer enhances the diffusion barrier of the ferroelectric layer" as maintained by the Office.

The Office sites *Suenaga et al.* for its disclosure of a ferroelectric thin film capacitor using an ABO_3 type oxide having a perovskite structure. The Office acknowledges that *Suenaga et al.* does not disclose the required iridium in the ferroelectric layer. *Vente et al.* apparently is applied for its disclosure of structure of hexagonal perovskites containing Ir. In making the rejection, the Office asserts that it would have been obvious to include Ir in the A or B sites of *Suenaga et al.* "in order to have a increased stability and fusion characteristics between the lower electrode and the ferroelectric layer of *Suenaga et al.* since *Suenaga et al.* discloses that the lower electrode contains Iridium and the integration of Ir in the A site or the B site of ferroelectric layer

enhances the diffusion barrier of the ferroelectric layer.” See page 3, lines 3-8 of the Office Action. Applicants respectfully submit that this motivation relied upon in the Office Action is apparently derived from disclosures which are misinterpreted in *Suenaga et al.*

Suenaga et al. teaches a ferroelectric layer having ABO_3 perovskite structure. However, there is no teaching or suggestion that such structure contains Ir in one of an A site and a B site. Furthermore, *Suenaga et al.* does not teach or suggest as the Office asserts “the integration of Ir in the A site or the B site of ferroelectric layer enhances the diffusion barrier of the ferroelectric layer.” The objective of *Suenaga et al.* is to provide a ferroelectric thin film capacitor capable of reducing a variation in characteristics between memory cells. See col. 1, line 67 to col. 2, line 2. *Suenaga et al.* teaches that the objective can be achieved by controlling grain size of the ferroelectric film. Col. 2, lines 5 to 21. This teaching does not motivate one skilled in the art to integrate Ir into the ABO_3 perovskite structure. *Vente et al.* does not remedy the deficiency of *Suenaga et al.* Specifically, *Vente et al.* only teaches the investigation of BaIrCoO and is silent about the merit on the integration of Ir in the ABO_3 perovskite structure for use in a ferroelectric capacitor.

Under U.S. patent law, in order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), the Office must demonstrate some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In the current instance, as demonstrated above, there is nothing in the teachings of either *Suenaga et al.* or *Vente et al.*

Amendment
Application No. 10/695,643
Attorney Docket No. 032057

which would lead the skilled artisan to the conclusion that "the integration of Ir in the A site or the B site of ferroelectric layer enhances the diffusion barrier of the ferroelectric layer" as the Examiner suggests. Wherefore, applicants respectfully request favourable reconsideration.

In regard to the rejection of dependent claim 8, the Office quote col.2, lines 22-33 of *Suenaga et al.*, and states that upper electrode of *Suenaga et al.* is Pt or Ir. Applicants respectfully submit that the above quote in col.2, lines 22-33 of *Suenaga et al.*, is simply teaching that the lower electrode maybe configured as a Pt electrode or a Pt alloy electrode. Wherefore, applicants respectfully request favorable reconsideration.

Claims 9-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Suenaga et al.* In response thereto, applicants respectfully traverse on the basis that the reference does not teach each and every limitation of the invention as set forth in claim 9. Specifically, the Office asserts that *Suenaga et al.* discloses an adhesive layer 81 having a surface roughness of 0.79 nm or less, referring to Figs. 7A and 7B. However, Figs. 7A and 7B of *Suenaga et al.* refer to a surface roughness of the ferroelectric thin film. See col. 6, lines 47-50.

Under U.S. patent law in order to establish a *prima facie* case of obviousness each and every limitation of the claim must be set forth in the cited references. As noted above, there is no teaching or suggestion in *Suenaga et al.* of an adhesive layer with a surface roughness of 0.79nm or less. Wherefore, applicants respectfully request favorable reconsideration.

Amendment
Application No. 10/695,643
Attorney Docket No. 032057

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read "Michael J. Caridi", with a long, sweeping horizontal line extending to the right.

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